

R1

1-6-06
303(d)
Part 1

561

From: "Mike Sandler" <mike@ccwi.org>
To: <commentletters@waterboards.ca.gov>
Date: 11/21/2005 2:57:55 PM
Subject: 303d List Comments w/attachments

To: State Water Resources Control Board and Interested Parties

Re: Comments on Revisions to the Clean Water Act Section 303(d) List-North Coast Region- Russian River Hydrologic Unit

I am submitting these comments on behalf of Community Clean Water Institute (CCWI), in regards to the Recommended Revisions to the Clean Water Act Section 303(d) List. CCWI submitted water quality data pertaining to Region 1- Russian River Hydrologic Unit for this revision, and I was pleased to see our data cited in several places. CCWI's goal is to support regulatory agencies and property owners in protecting clean water and public health. We are proud to be part of one of the first times that citizen monitoring data (data collected by specially trained volunteers) is being incorporated into statewide water planning. We see this as a milestone for citizen monitoring. In several places, it appears CCWI data was helpful in drawing conclusions about listing for water quality impairment. However, we are very concerned with some of the conclusions drawn. We feel the decision to delist Pocket Canyon Creek for turbidity was based on incorrect assumptions. We also object to the proposed delisting of the Laguna de Santa Rosa for nutrients, and have further recommendations as listed below.

The attached letter and spreadsheet contains our comments with references to an attached Excel Spreadsheet containing CCWI data collected between 2003 and 2005. Please accept this data as an addendum to CCWI's previous submittal dated June 11, 2004.

In brief our comments are as follows:

We strongly object to the Recommendations to:

- * Delist the Pocket Canyon Creek portion of the Guerneville HSA for turbidity
- * Delist the Laguna de Santa Rosa for nutrients

We concur with the Recommendations to:

- * List Santa Rosa Creek and Big Sulphur Creek for conductivity
- * Do not Delist Russian River near Cloverdale and Healdsburg for turbidity
- * Do not Delist the Laguna de Santa Rosa for dissolved oxygen and turbidity

We further recommend that the following listings be added to the Recommendations:

- * Laguna de Santa Rosa should be listed as impaired for conductivity
- * Colgan Creek (a tributary to the Laguna de Santa Rosa) should be listed as impaired for conductivity and Phosphorus (Phosphate - ortho as P)
- * Santa Rosa Creek should be listed as impaired for conductivity,

Phosphorus, E. coli

* Dutch Bill Creek should be listed as impaired for Phosphorus

I am available to discuss these suggestions, discuss data and answer any questions you may have.

Sincerely,

Mike Sandler, Program Coordinator,
Community Clean Water Institute
mike@ccwi.org; (707) 824-4370

- - - - -
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FOR THE PUBLIC RECORD

November 16, 2005

Selica Potter, Acting Clerk to the Board
State Water Resources Control Board, Executive Office
1001 I Street, 24th Floor
Sacramento, CA 95814
Email: commentletters@waterboards.ca.gov

3/

RE: Comments on Revisions to the Clean Water Act Section 303(d) List- North Coast Region-
Russian River HU

Dear Ms. Potter,

I am submitting these comments on behalf of Community Clean Water Institute (CCWI), in regards to the Recommended Revisions to the Clean Water Act Section 303(d) List. CCWI submitted water quality data pertaining to Region 1- Russian River HU for this revision, and I was pleased to see our data cited in several places. CCWI's goal is to support regulatory agencies and property owners in protecting clean water and public health. We are proud to be part of one of the first times that citizen monitoring data (data collected by specially trained volunteers) is being incorporated into statewide water planning. We see this as a milestone for citizen monitoring. In several places, it appears CCWI data was helpful in drawing conclusions about listing for water quality impairment. **However, we are very concerned with some of the conclusions drawn. We feel the decision to delist Pocket Canyon Creek for turbidity was based on incorrect assumptions. We also object to the proposed delisting of the Laguna de Santa Rosa for nutrients, and have further recommendations as listed below.**

The enclosed letter contains our comments with references to an attached Excel Spreadsheet containing CCWI data collected between 2003 and 2005. Please accept this data as an addendum to CCWI's previous submittal dated June 11, 2004.

In brief our comments are as follows:

We strongly **object** to the Recommendations to:

- Delist the Pocket Canyon Creek portion of the Guerneville HSA for turbidity
- Delist the Laguna de Santa Rosa for nutrients

Delist

*ONLY POTENTIAL
EXISTING CHANGE*

We **concur** with the Recommendations to:

- List Santa Rosa Creek and Big Sulphur Creek for conductivity
- Do not Delist Russian River near Cloverdale and Healdsburg for turbidity
- Do not Delist the Laguna de Santa Rosa for dissolved oxygen and turbidity

FS 2911

LOE 3402

We further recommend that the following listings be added to the Recommendations:

- **Laguna de Santa Rosa should be listed as impaired for conductivity**
- **Colgan Creek (a tributary to the Laguna de Santa Rosa) should be listed as impaired for conductivity and Phosphorus (Phosphate - ortho as P)**
- **Santa Rosa Creek should be listed as impaired for conductivity, Phosphorus , E. coli**
- **Dutch Bill Creek should be listed as impaired for Phosphorus**

I am available to discuss these suggestions, discuss data and answer any questions you may have.

Sincerely,

Mike Sandler, Program Coordinator,
Community Clean Water Institute
mike@ccwi.org; (707) 824-4370

Cc:

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Comments on Recommended Revisions to the Clean Water Act Section 303(d) List

Several comments below refer to data collected by CCWI's Citizen Monitoring Program. We submitted 2003 data to the SRWCB, and are augmenting this data with 2004 and 2005 data. All data was produced according to the Quality Assurance Program Plan (QAPP) submitted on June 11, 2004. For more information, contact CCWI at (707) 824-4370 or info@ccwi.org.

I. Objections to Current Recommendations to Delist

We strongly object to the Recommendations to:

- **Delist the Pocket Canyon Creek portion of the Guerneville HSA for Turbidity.**
- **Delist the Laguna de Santa Rosa for nutrients**

Regarding: Objection to Recommendation to Delist the Pocket Canyon Creek portion of the Guerneville HSA for Turbidity.

On Page 65 of the Factsheets Supporting Revision for Region 1- Russian River HU, Lower Russian River HA, Guerneville HAS, the State recommends to Delist the Pocket Canyon Creek portion of the Guerneville HSA for Turbidity. We strongly object to this recommendation.

In a letter submitted by CCWI dated June 11, 2004, CCWI noted, "There are some limitations to the amount of information we were able to provide in this submittal. For example, we have not correlated our data with dates of storm events in the watersheds monitored. It is our hope that you will be able to integrate this data with other data you have for a more comprehensive view of water quality data in the North Coast."

Due to safety concerns and insurance limitation, our volunteers do not monitor during storm surges. Our data is collected 1 day per month, based on volunteer availability, without consideration to storm events. Our data is baseline, going out the same time during each month, specifically NOT during weather events when spikes in some parameters commonly occur (ie turbidity, E.coli, nutrients). **We consider our data baseline data.** The Turbidity Standard is 20% above baseline. In order to determine 20% above baseline data, there needs to be storm event monitoring, which would reveal the stream water quality beyond baseline. **Using our data alone only shows the baseline, it is not sufficient to draw a conclusion to delist.**

Data from First Flush stormwater monitoring should be incorporated, to get a fuller picture. Below is photographic evidence showing high turbidity on Dutch Bill Creek. This photo was taken on 10-19-2004 during a storm event.



High turbidity on Dutch Bill Creek (photo taken 10/19/2004 by Brock Dolman)

For the above reasons, it is inappropriate to use CCWI data for PCC, DBC, JEN, or LAN as lines of evidence for this proposed delisting.

As noted on Pg. 116, 'the rest of the segments currently listed under the Russian River HU, Lower RR HA, and Gville HSA should remain on the 303d list as they are currently.' We believe that all segments should remain on the 303d list, including Pocket Creek.

Additional documentation:

Contact Russian RiverKeeper based in Healdsburg, CA for data from the Russian River First Flush.

Prunuske Chatham, Inc. (PCI) based in Occidental, Ca has been collecting storm event water quality data in the Jenner area. This data would complement CCWI's baseline data.

The Sonoma County Water Agency is currently collecting data in the Lower Russian River with deep water monitoring equipment. This data must be included in any analysis of water quality.

Regarding: Objection to Recommendation to Delist the Laguna de Santa Rosa for Nutrients.

The listing for Phosphorus in the Laguna de Santa Rosa is appropriate and necessary. CCWI is providing numerical as well as narrative data. We have used a 0.1 mg/L EPA recommended level, and also a 0.16 mg/L CCAMP action level as potential numerical criteria in order to analyze comparable data across creeks and streams.

Our data shows in 2003 that 9 out of 12 samples exceeded 0.1 mg/L Phosphorus. When combined with our 2004 and 2005 data, 53 out of 57 samples exceeded both the USEPA recommended guideline of 0.1 mg/L and the CCAMP action level of 0.16 mg/L for Phosphorus. The average of those 57 samples is 0.745 mg/L, over 7 times the limit. Our data consistently shows exceedences of both the USEPA recommended guideline of 0.1 mg/L and the CCAMP action level of 0.16 mg/L (see attached worksheets "LAG nutrients" and "LAG Phosphorus 2004").

CCWI has collected data throughout the Russian River watershed. Of the 9 creeks monitored by CCWI in the Russian River in 2004, the sites at the Laguna consistently show a baseline Phosphorus level above all other creeks (see attached worksheet "Phosphorus All Creeks-2004"). This is not a "normal" background level, but an elevated level which is the result of impairments that have been documented.

Evidence of Eutrophic Plant Activity

The photos below show some of the eutrophic conditions of the Laguna.



There is substantial visible evidence of eutrophication in the Laguna system. We are attaching photographic evidence of the *Ludwigia hexapetala* plant infestation in the Laguna. Almost every government agency involved with public health and water quality in the North Coast has been meeting regularly over several years as part of the Laguna Task Force to discuss this infestation in relation to mosquito habitat, the threat of West Nile Virus, and water quality issues. A simple visit to the area over the past 2 years would confirm the presence of eutrophic plant growth. In fact, the County of Sonoma, several Cities and other agencies have put \$1.4 million towards the eradication of this nuisance plant. In budget constricted times, this, more than any other narrative, illustrates the severity of the problem.

Following is an article from the Santa Rosa Press Democrat:

Water weed spreads in county

Officials urgently seeking ways to control Ludwigia in Russian River, laguna

Friday, September 17, 2004

By CAROL BENFELL
THE PRESS DEMOCRAT

Sonoma County officials are urgently seeking a way to control a fast-growing water weed that is choking the Laguna de Santa Rosa and has spread to the Russian River.

The worst infestations of Ludwigia are in the laguna near Sebastopol and in flood-control channels in Rohnert Park, where the weed now sprouts five feet above the water.

The plant smothers native plants and makes it harder for waterfowl to land on the water surface and find food. It decays in the water, depleting oxygen and killing fish.

Now research shows the weed is changing the waterways in which it lives, creating an environment favorable to the specific kinds of mosquitoes that carry West Nile virus, which can sicken or kill birds, horses and people.

Researchers think Ludwigia entered the laguna when someone dumped an aquarium containing the plant.

West County Supervisor Mike Reilly last week called on the government agencies with control of the laguna to step up their research on ways to reduce the threat to human health.

"It only makes sense from a public health standpoint to be proactive about this," he said. "We're seeing West Nile in birds, we're seeing it in horses, and I think it's just a matter of time" until it appears in people.



Invasive species ecologist Anna Sears gets a close-up view of the Ludwigia water weed choking the Rohnert Park Flood Control canal Wednesday near the Rohnert Park Expressway. (KENT PORTER / The Press Democrat)
[Zoom Photo](#)

**LUDWIGIA
HEXAPETALA**

He said he has asked the Laguna Task Force, a coalition of government agencies with responsibility for the laguna, to give him a plan and options for Ludwigia control by Oct. 20.

But bringing Ludwigia under control is not going to be easy, researchers say. The plant reproduces from every broken-off section of root, leaf or stem and produces hundreds of seeds as well.

"This thing is a real menace," said Donald Strong, who specializes in the study of invasive aquatic plants at UC Davis. "With enough money and enough attention, you could probably eradicate it -- I guess."

Ludwigia is a problem because it forms dense mats and towering columns that protect juvenile mosquitoes from natural predators. It interferes with the mosquito control district's efforts to disburse mosquito larva-killing pellets.

FACTS

A fast growing water weed, Ludwigia hexapetala has bright yellow flowers and willow-like leaves that shield mosquito larvae and eggs from sprays and predators.

It lives in direct sunlight, in shallow, nutrient-rich water and is an indicator of how much the Laguna de Santa Rosa has become degraded in recent years.

Domestic forms of the Ludwigia have been seen along the edge of the laguna since the 1930s, but it does not form the dense mats typical of hexapetala.

But it's worse than that -- its roots slow the flow of water and increase the buildup of silt, creating a stagnant, foul pool that's the prime habitat of the Culex pipiens mosquito, a prime carrier of West Nile virus, said Anna Sears, director of research for the nonprofit Laguna Foundation, an environmental group.

Ludwigia's leaves cover and smother native plants and decrease the amount of open water where ducks can land and herons can wade in search of food, Sears said.

Its decomposing leaves rob the water of oxygen, leading to fish die-offs, she said.

"Whenever you get a strongly invasive species like this dominating an area, you can have a really substantial impact on the whole ecological system, affecting plant and animal communities," Sears said.

The foundation, working with state and local agencies, has begun its own research effort with the help of Lily Verdone, a graduate student from Sonoma State University.

Verdone is mapping the rapid spread of the plant, which in three years has changed from a placid series of clusters along the laguna to a mass of vegetation that towers above the water, with roots extending four to five feet below into the stream bed.

"Something gave it a boost three years ago. We don't know what," Verdone said.

During the past two years, winter rains have broken off pieces of the plant, which have floated away and started new colonies in the Russian River and its tributaries.

Verdone wants to find out what the plant needs to live in hopes of finding a natural way of starving it to death, by depriving it of sunlight, nutrients or shallow water.

One experiment will see if the plant's growth corresponds to increases in nitrates and phosphates, which come into the laguna in runoff from agricultural and residential properties as well as discharge from the regional wastewater treatment plant on Llano Road.

Verdone also is trying to find out exactly how deep the roots can go under water to reach the soil they live in and how fast the plant decomposes. It seems that the plant thrives in water less than three feet deep.

The Sonoma-Marín mosquito control district fears that lowering flows in the Russian River, as proposed by the Sonoma County Water Agency, would hasten the spread of Ludwigia into the river and downstream.

Removal options under discussion include hand or mechanical removal, cattle grazing in places where the plant lives on land, covering small terrestrial areas of Ludwigia with plastic to deprive them of sunlight and dredging the channel.

Herbicides also are on the table, but there's little enthusiasm for using them.

"I think there's a lot of ambivalence, and different agencies feel differently about it," Sears said.

Verdone wants to find out if Ludwigia's seeds are fertile. Removing the plant may have no effect on seeds that fall to the river bottom during the removal process.

Whatever removal method is chosen, it's going to take a lot of time and money to break the hold Ludwigia has on the laguna and the flood channels, Strong said. "It's a big deal, and it's going to cost some money, he said.

He said the only direct way to control Ludwigia is with herbicides, most likely Rodeo, but the cost of application and in fighting anti-pesticide lawsuits would be high.

"The other thing people have done is go out in boats and drag it off, put it in trucks, and haul to a landfill. That's expensive, and next year you're going to have to come back in and do it again. It might take vigilance over several years to get it low," Strong said.

You can reach Staff Writer Carol Benfell at 521-5259 or cbenfell@pressdemocrat.com.

Summary of Opposition to delisting Laguna for nutrients

CCWI opposes the de-listing of the Laguna de Santa Rosa for nutrients. CCWI data shows elevated nutrient levels, photographic evidence of eutrophic plant activity, and government agency involvement in invasive plant eradication efforts costing millions of dollars which can be traced back to elevated nutrient levels. Delisting the Laguna is counterproductive to the efforts made to restore this impaired waterbody. The North Coast Board staff is opposed to delisting, and CCWI expects opposition from the EPA, which was the agency that forced the State to list it.

II. Concur with the following Recommendations to List

SWRCB Recommendations to List:

A) Pages 25-6 of the Fact Sheets Supporting Revisions to the Clean Water Act Section 303(d) List- Region 1 Russian River HU, Lower Russian River HA, Guerneville HAS Recommends listing pH in Pocket Creek as less than 6.5 near Guerneville (Pocket Creek). Of the data initially submitted, 6 out of 27 readings on Pocket Creek were below 6.5. We agree that this data at this point could be seen to merit a listing of pH.

However, when we incorporate our 2004 and 2005 data, then only 6 out of 85 samples are below 6.5. All of those exceedances occurred in 2003. In 2004 and 2005, pH in Pocket Creek was never measured below 7.1. For this reason, we are unsure about this listing. We will continue to monitor Pocket Creek, and will update the SWRCB as appropriate.

B) Pg. 27 of the Fact Sheets Supporting Revisions to the Clean Water Act Section 303(d) List-Region 1- Russian River HU, Middle Russian River HA, Big Sulphur Creek HAS Recommends listing Big Sulphur Creek for Conductivity. We concur with your recommendation to list Big Sulphur Creek for Conductivity.

C) Pg. 31 of the Fact Sheets Supporting Revisions to the Clean Water Act Section 303(d) List-Region 1- Russian River HU, Middle Russian River HA, Santa Rosa Creek Recommends listing Santa Rosa Creek for Conductivity. We concur with your recommendation to list Santa Rosa Creek for Conductivity. Results seen in our 2003 data have been augmented by data from 2004 and 2005. When we add in our 2004 and 2005 data, the Excel Worksheet "LAG SRC COL Conductivity" shows impairment in Santa Rosa Creek for Conductivity: 19 out of 24 samples exceeded 320 umhos. This listing is warranted.

Note: The Laguna de Santa Rosa was above 320 umhos in 13 out of 15 samples taken in 2003. When we add in our 2004 and 2005 data, the Laguna de Santa Rosa was above 320 umhos in 58 out of 62 samples. While Big Sulphur Creek had a high reading of 350, the Laguna de Santa Rosa had a high reading of 890, and 11 out of 62 readings were above 600 umhos. If the Laguna de Santa Rosa is not yet listed for Conductivity, it should be. See Part IV of this comment.

III. Comments on the following Recommendations Not to List/ Not to Delist

These creeks were NOT previously listed, but were considered for listing partially based on CCWI data.

Phosphorus on Dutch Bill Creek

Pg 75 (pt 2) of the Fact Sheets Supporting “Do Not List” Recommendations to the Clean Water Act Section 303(d) List- Region 1 recommends to not list Dutch Bill Creek for Phosphorus stating, “no guideline available... for Phosphorus for this water segment.” CCWI believes there is significant data showing levels above a 0.1 mg/L, and also a 0.16 mg/L CCAMP action level. Based on CCWI data for 2004, there were 20 exceedences out of 50 samples taken above the 0.1 mg/L standard as shown in CCWI Worksheet “DBC Phosphorus.” This data justifies the listing of Dutch Bill Creek for Phosphorus.

Phosphorus on Santa Rosa Creek

Pg 84 (pt 2) of the Fact Sheets Supporting “Do Not List” Recommendations to the Clean Water Act Section 303(d) List- Region 1 recommends to not list Santa Rosa Creek for Phosphorus stating, “no guideline available... for Phosphorus for this water segment.” CCWI believes there is significant data showing levels above a 0.1 mg/L as potential numerical criteria. Based on CCWI data for 2004, there were 4 exceedences out of 8 samples taken above the 0.1 mg/L standard as shown in CCWI Worksheet “SRC Phosphorus.” This data justifies the listing of Santa Rosa Creek for Phosphorus.

SWRCB Recommendations Not to Delist:

Turbidity in the Russian River near Healdsburg and Cloverdale

Pg 27 (pt 3) of the Fact Sheets Supporting “Do Not Delist” Recommendations to the Clean Water Act Section 303(d) List- Region 1 recommends to not delist Russian River HU, Middle Russian River HA, Geyserville HSA for turbidity. CCWI concurs with this recommendation.

Dissolved Oxygen and Turbidity for the Laguna de Santa Rosa

Pg 29 (pt 3) of the Fact Sheets Supporting “Do Not Delist” Recommendations to the Clean Water Act Section 303(d) List- Region 1 recommends to not delist Russian River HU, Middle Russian River HA, Laguna de Santa Rosa for dissolved oxygen and pg 31 (pt 3) for turbidity. For turbidity, out of 14 samples submitted from 2003, 6 out of 14 were above the standard of 25 NTU. This data can be found in CCWI Worksheet “LAG Turbidity.” CCWI concurs with these recommendations.

IV. Additional proposed Listings:

- **Laguna de Santa Rosa should be listed as impaired for conductivity**

The Excel Worksheet “LAG SRC COL Conductivity” shows impairment on the Laguna de Santa Rosa for conductivity. The Laguna de Santa Rosa was above 320 umhos in 13 out of 15 samples taken in 2003. When we add in our 2004 and 2005 data, the Laguna de Santa Rosa was above 320 umhos in 57 out of 60 samples. The Laguna de Santa Rosa had a high reading of 890 which is abnormally high for a freshwater stream, and 11 out of 62 readings were above 600 umhos. If the Laguna de Santa Rosa is not yet listed for conductivity, it should be.

- **Colgan Creek (tributary to the Laguna de Santa Rosa) should be listed as impaired for conductivity**

The Excel Worksheet "LAG SRC COL Conductivity" shows impairment on Colgan Creek for conductivity. 10 out of 10 samples were above 320 umhos in 2005.

- **Colgan Creek (tributary to the Laguna de Santa Rosa) should be listed as impaired for Phosphorus**

The Excel Worksheet "COL Phosphorus" shows impairment on Colgan Creek for Phosphorus. 9 out of 10 samples were above 0.1 mg/L, and also 0.16 mg/L CCAMP action level in 2005. the average of those 10 samples is 0.41 mg/L.

- **Santa Rosa Creek should be listed for Phosphorus**

CCWI believes there is significant data showing levels above a 0.1 mg/L as potential numerical criteria. Based on CCWI data for 2004, there were 4 exceedences out of 8 samples taken above the 0.1 mg/L standard as shown in Worksheet "SRC Phosphorus." This data justifies the listing of Santa Rosa Creek for Phosphorus.

- **Santa Rosa Creek should be listed as impaired for E. coli.**

The City of Santa Rosa has been collecting data on Santa Rosa Creek for several years. More recently the Regional Water Quality Control Board has been posting data online at http://www.waterboards.ca.gov/northcoast/programs/sampling/santa_rosa_creek.html. The worksheet "SRC E.coli" contains data collected in 2005, showing 6 out of 6 samples collected exceeded the Department of Health standard of 235 MPN/ 100ml with an average of 444 MPN.

- **Dutch Bill Creek should be listed for Phosphorus**

As noted in part III of this comment, CCWI believes there is significant data showing levels above a 0.1 mg/L, and also a 0.16 mg/L CCAMP action level. Based on CCWI data for 2004, there were 20 exceedences out of 50 samples taken above the 0.1 mg/L standard as shown in Worksheet "DBC Phosphorus." This data justifies the listing of Dutch Bill Creek for Phosphorus.

Worksheet attachments 303d list comments to SWRCB

November 2005

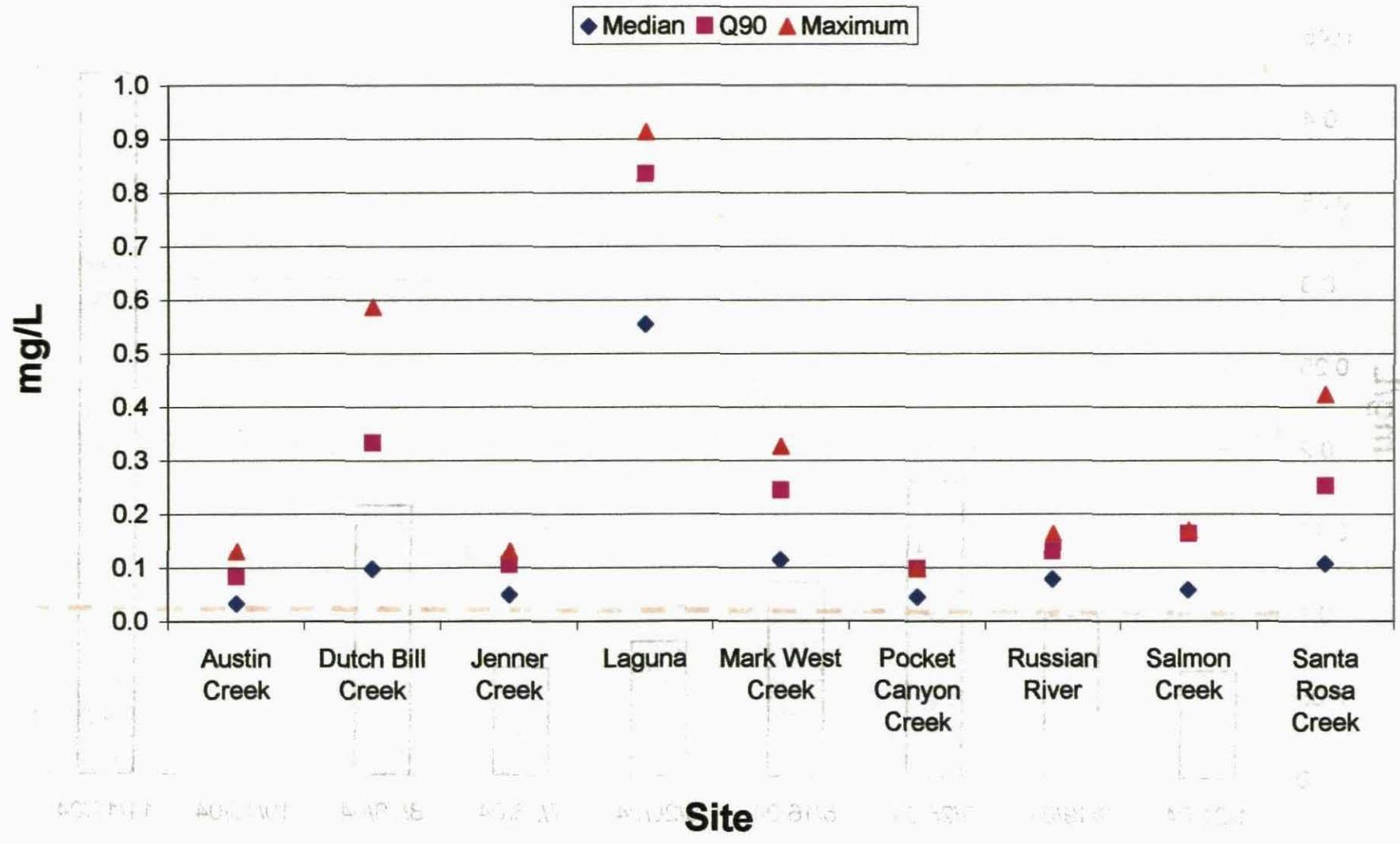
Contact: Mike Sandler, Program Coordinator
Community Clean Water Institute
6741 Sebastopol Ave., Suite 140
Sebastopol, CA 95472
(707) 824-4370

www.ccwi.org info@ccwi.org

Station ID	Station Location	Station City	Station County
COL020	Colgan Creek, tributary to the Laguna de Santa Rosa; North of LAG050 on Llano Rd.; Just north of Wastewater Treatment Plant; on west side of bridge	Sebastopol	Sonoma
DBC010	Dutch Bill Creek: Fish ladder	Occidental	Sonoma
DBC020	Dutch Bill Creek; Westminister, downstream from Bohemian Ranch	Occidental	Sonoma
DBC030	Dutch Bill Creek; Camp Meeker dam	Camp Meeker	Sonoma
LAN010	Lancel Creek	Occidental	Sonoma
DBC050	Dutch Bill Creek; 75 yards downstream from pump station	Occidental	Sonoma
DBC060	Dutch Bill Creek; Graton Rd. and Main St., at bridge	Occidental	Sonoma

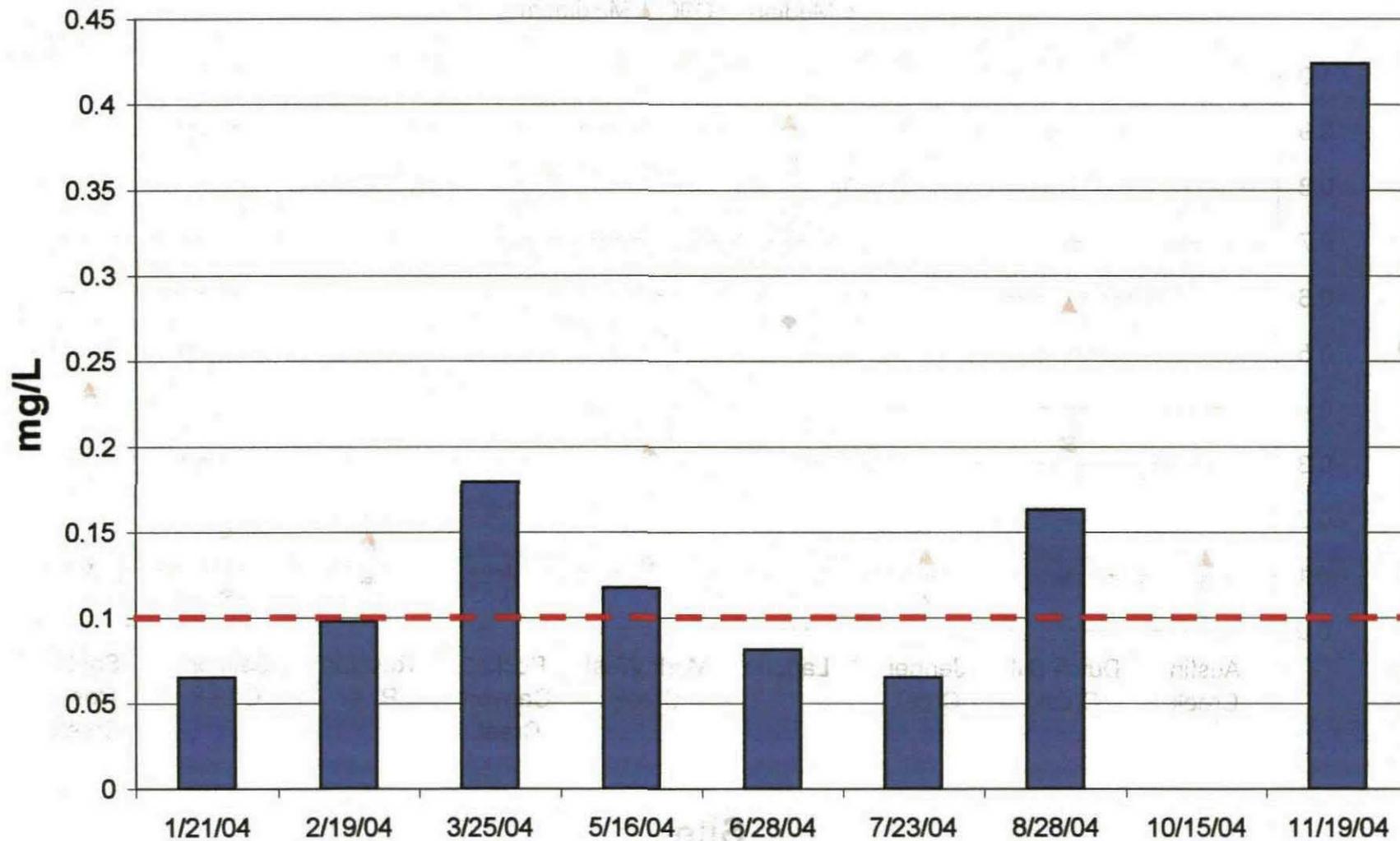
PCC020	Pocket Canyon Creek: 12170 Hwy 116, downstream of Inn and the tank in the creek	Guerneville	Sonoma
PCC030	Pocket Canyon Creek: 11900 Hwy 116, backyard	Guerneville	Sonoma
PCC040	Pocket Canyon Creek: 50 feet upstream from bridge along Hwy 116 at May's Canyon Rd.	Guerneville	Sonoma
LAG030	Laguna de Santa Rosa; Permanent gage behind Community Center in Sebastopol	Sebastopol	Sonoma
LAG040	Laguna de Santa Rosa; By bridge at Todd Rd. South of Sebastopol	Sebastopol	Sonoma
LAG050	Laguna de Santa Rosa; By bridge at Llano Rd; Just south of the Wastewater Treatment Plant; South of Sebastopol	Sebastopol	Sonoma
LAG080	Laguna de Santa Rosa; Sonoma County Water Agency Property with permission; East of overpass at intersection of Stony Pt Rd/ Rohnert Park Expressway. Sample on south bank through riparian trees.	Rohnert Park	Sonoma
SRC040	Santa Rosa Creek; 3rd St., behind Vineyard Hotel, west of Hwy 101 along the Prince George Greenway	Santa Rosa	Sonoma

Phosphate-Phosphorus (PO4-P) 2004 Data



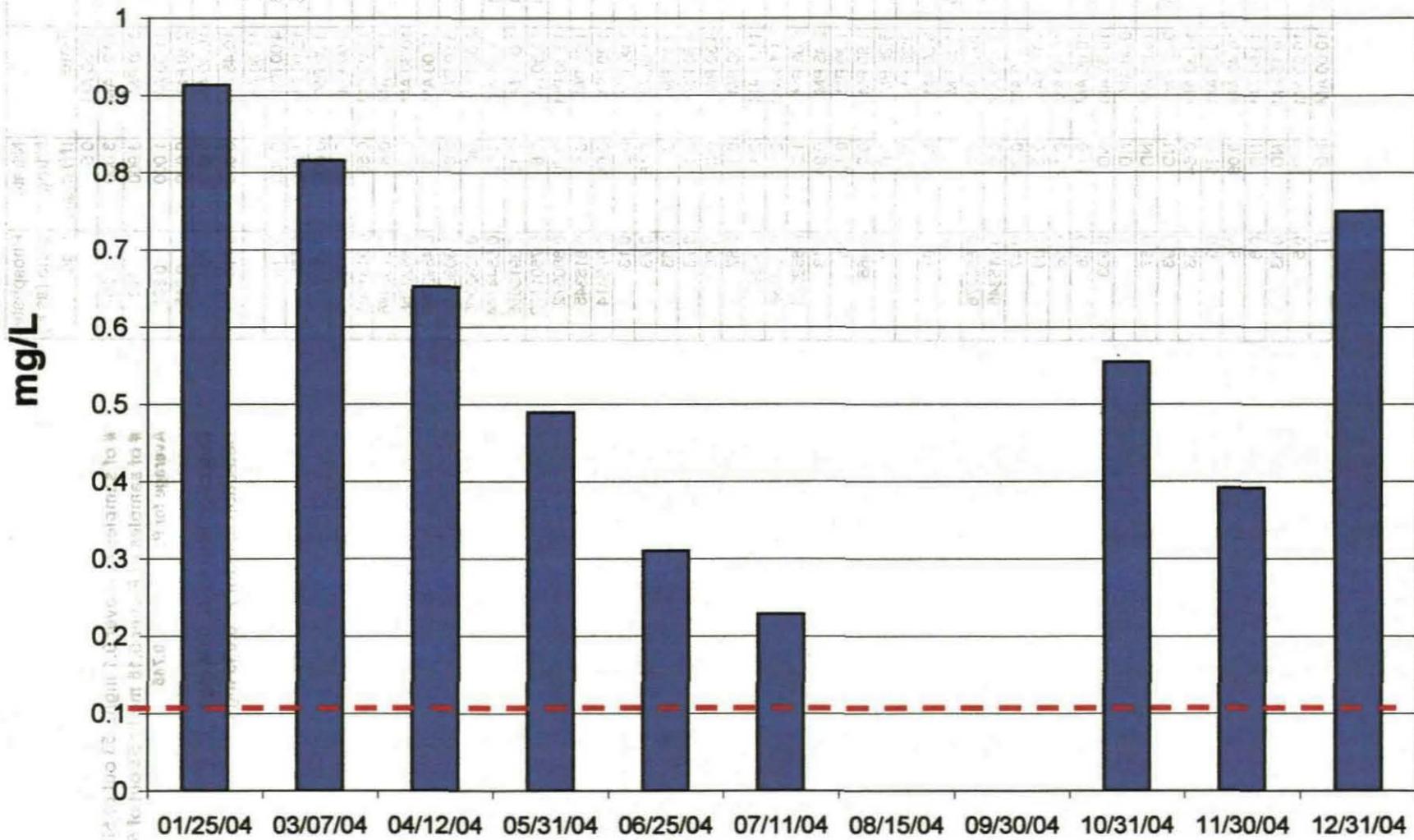
Phosphate-Phosphorus (PO₄-P)

SRC
Santa Rosa Creek



Phosphate-Phosphorus (PO₄-P)

LAGO30
Laguna de Santa Rosa



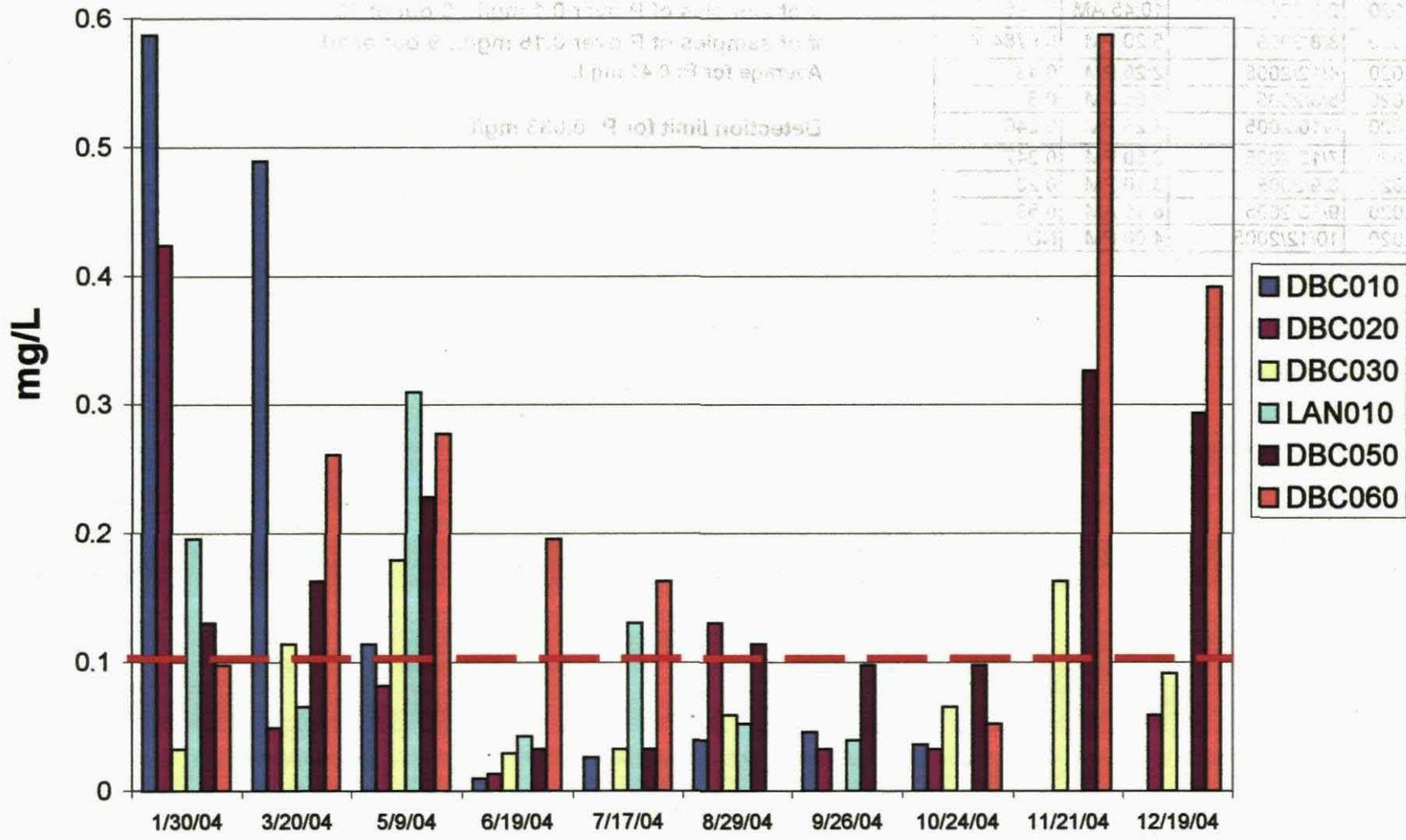
Station ID	Date	Time	Nitrate-Nitrogen (N) mg/L	Phosphate-ortho (as P) mg/L
LAG030	1/23/2003	11:30 AM	0.5	
LAG030	2/26/2003	10:20 AM	3.000	1.207
LAG030	3/31/2003	3:00 PM	3.900	ND
LAG030	4/27/2003	11:00 AM	1.000	0.881
LAG030	6/8/2003	2:30 PM	0.020	0.815
LAG030	7/6/2003	10:30 AM	0.000	0.783
LAG030	8/11/2003	10:48 AM	0.050	0.718
LAG030	10/5/2003	11:30 AM		
LAG030	11/16/2003	4:00 PM	0.280	0.718
LAG030	12/14/2003	12:00 PM	1.280	1.565
LAG040	6/20/2003	3:20 PM	0.000	0.750
LAG040	8/13/2003	3:00 PM	0.120	1.305
LAG030	1/25/2004	12:00 PM	0.55	0.9131861
LAG030	3/7/2004	10:45 AM	0.6	0.8153448
LAG030	4/12/2004	10:30 AM	0.05	0.6522758
LAG030	5/31/2004	11:00 AM	0.05	0.4892089
LAG030	6/25/2004	3:50 PM	0.01	0.309831
LAG030	7/11/2004	6:00 PM	ND	0.2282965
LAG030	10/31/2004	11:45 AM	0.09	0.5544344
LAG030	11/30/2004	1:00 PM	0.12	0.3913655
LAG030	12/31/2004	11:30 AM	0.6	0.7501172
LAG030	1/30/2005	12:30 PM	0.78	0.880572
LAG030	2/27/2005	1:00 PM	0.5	0.815345
LAG030	3/26/2005	1:30 PM	0.64	0.978414
LAG030	4/30/2005	1:00 PM	0.2	0.13
LAG030	5/30/2005	11:00 AM	0.18	0.73
LAG030	6/27/05	3:15 PM	0	0.63
LAG030	7/29/2005	4:30 PM	0.14	0.73
LAG030	8/26/2005	4:30 PM	0.03	0.56
LAG030	9/23/2005	3:30 PM	0.1	0.57
LAG040	1/15/2005	11:10 AM	2.1	0.9458
LAG040	2/8/2005	11:14 AM	0.9	0.326138
LAG040	3/8/2005	5:05 PM	1.2	0.652276
LAG040	4/12/2005	2:45 PM	0.94	1.13
LAG040	5/6/2005	1:30 PM	0.12	0.5
LAG040	6/10/2005	1:50 PM	0.2	0.466
LAG040	7/12/2005	3:25 PM	ND	0.9
LAG040	8/9/2005	3:25 PM	ND	1
LAG040	9/13/2005	8:50 AM	ND	1.07
LAG040	10/12/2005	4:20 PM	ND	1
LAG050	2/18/2005	10:20 AM	0.24	0.652276
LAG050	3/19/2005	10:20 AM	0.6	0.815345
LAG050	4/20/2005	11:15 AM	0.22	0.47
LAG050	5/11/2005	10:00 AM	0.3	1.03
LAG050	6/10/2005	10:00 AM	0.12	0.56
LAG050	6/10/2005	10:00 AM	0.11	0.56
LAG050	7/13/2005	10:30 AM	ND	0.933
LAG050	8/10/2005	9:40 AM	ND	1
LAG050	9/12/2005	10:00 AM	ND	0.57
LAG050	10/24/2005	9:25 PM	ND	0.93
LAG080	4/20/2005	10:30 AM	0.64	0.33
LAG080	5/11/2005	10:50 AM	0.35	0.9
LAG080	6/10/2005	10:45 AM	0.06	0.5
LAG080	7/13/2005	10:50 AM	ND	0.8
LAG080	8/10/2005	10:15 PM	ND	0.83
LAG080	9/12/2005	10:30 AM	ND	0.5
LAG080	10/24/2005	10:00 AM	ND	1

of samples of P over 0.1 mg/L: 53 out of 57
of samples of P over 0.16 mg/L: 53 out of 57
Average for P: 0.746

Detection limit for N: 0.04 mg/L
Detection limit for P: 0.033 mg/L

Phosphate-Phosphorus (PO₄-P)

DBC - Dutch Bill Creek



Station ID	Collection Date	Collection Time	Phosphate - ortho (as P) mg/L
COL020	1/15/2005	10:30 AM	0.587048
COL020	2/8/2005	10:45 AM	0.166
COL020	3/8/2005	5:20 PM	0.978414
COL020	4/12/2005	2:25 PM	0.43
COL020	5/6/2005	1:05 PM	0.3
COL020	6/10/2005	1:25 PM	0.246
COL020	7/12/2005	2:50 PM	0.247
COL020	8/9/2005	3:10 PM	0.23
COL020	9/13/2005	8:15 AM	0.53
COL020	10/12/2005	4:00 PM	ND

of samples of P over 0.1 mg/L: 9 out of 10
 # of samples of P over 0.16 mg/L: 9 out of 10
 Average for P: 0.41 mg/L

Detection limit for P: 0.033 mg/L

Station ID	Date	Time	Conductivity (uS)
LAG030	1/23/2003	11:30 AM	290
LAG030	2/26/2003	10:20 AM	610
LAG030	3/31/2003	3:00 PM	660
LAG030	4/27/2003	11:00 AM	390
LAG030	6/8/2003	2:30 PM	660
LAG030	7/6/2003	10:30 AM	690
LAG030	8/11/2003	10:48 AM	650
LAG030	10/5/2003	11:30 AM	670
LAG030	11/16/2003	4:00 PM	450
LAG030	12/14/2003	12:00 PM	510
LAG040	6/20/2003	3:20 PM	890
LAG040	8/13/2003	3:00 PM	790
LAG050	6/21/2003	9:30 AM	790
LAG050	8/13/2003	3:30 PM	780
LAG030	1/25/2004	12:00 PM	430
LAG030	3/7/2004	10:45 AM	490
LAG030	4/12/2004	10:30 AM	610
LAG030	5/31/2004	11:00 AM	600
LAG030	6/25/2004	3:50 PM	310
LAG030	7/11/2004	6:00 PM	390
LAG030	8/15/2004	9:45 AM	390
LAG030	9/30/2004	12:00 PM	360
LAG030	10/31/2004	11:45 AM	310
LAG030	11/30/2004	1:00 PM	370
LAG030	12/31/2004	11:30 AM	200
LAG030	1/30/2005	12:30 PM	340
LAG030	2/27/2005	1:00 PM	430
LAG030	3/26/2005	1:30 PM	380
LAG030	4/30/2005	1:00 PM	600
LAG030	5/30/2005	11:00 AM	610
LAG030	6/27/2005	3:15 PM	540
LAG030	7/29/2005	4:30 PM	730
LAG030	8/26/2005	4:30 PM	770
LAG030	9/23/2005	3:30 PM	690
LAG040	1/15/2005	11:10 AM	480
LAG040	2/8/2005	11:14 AM	640
LAG040	3/8/2005	5:05 PM	580
LAG040	4/12/2005	2:45 PM	540
LAG040	5/6/2005	1:31 PM	450
LAG040	6/10/2005	1:50 PM	560
LAG040	7/12/2005	3:25 PM	820
LAG040	8/9/2005	3:25 PM	940
LAG040	9/13/2005	8:50 AM	960
LAG040	10/12/2005	4:20 PM	1130
LAG050	2/18/2005	10:20 AM	390
LAG050	3/19/2005	10:20 AM	470
LAG050	4/20/2005	11:15 AM	690
LAG050	5/11/2005	10:00 AM	370
LAG050	6/10/2005	10:00 AM	510
LAG050	7/13/2005	10:30 AM	860
LAG050	8/10/2005	9:40 AM	910
LAG050	9/12/2005	10:00 AM	1150
LAG050	10/24/2005	9:25 AM	1030
LAG080	4/20/2005	10:30 AM	640
LAG080	5/11/2005	10:50 AM	500
LAG080	6/10/2005	10:45 AM	530
LAG080	7/13/2005	10:50 AM	880
LAG080	8/10/2005	10:15 AM	930
LAG080	9/12/2005	10:25 AM	1210
LAG080	10/24/2005	9:55 AM	980

LAG # over 320: 57 out of 60

SRC040	2/26/2003	10:20 AM	370
SRC040	3/28/2003	5:30 PM	370
SRC040	4/30/2003	5:00 PM	230
SRC040	6/25/2003	5:10 PM	460
SRC040	7/23/2003	5:20 PM	510
SRC040	8/28/2003	5:00 PM	520
SRC040	1/21/2004	11:30 AM	250
SRC040	2/19/2004	1:35 PM	120
SRC040	3/25/2004	4:30 PM	180
SRC040	5/16/2004	6:37 PM	490
SRC040	6/28/2004	6:00 PM	330
SRC040	7/23/2004	6:00 PM	550
SRC040	8/28/2004	12:00 PM	530
SRC040	10/15/2004	12:30 PM	570
SRC040	11/19/2004	12:00 PM	500
SRC040	1/21/2005	12:36 PM	330
SRC040	2/28/2005	3:18 PM	200
SRC040	3/11/2005	10:00 AM	340
SRC040	4/28/2005	11:30 AM	420
SRC040	6/2/2005	9:45 AM	390
SRC040	6/28/2005	10:30 AM	490
SRC040	7/29/2005	10:30 AM	520
SRC040	8/30/2005	10:20 AM	570
SRC040	9/29/2005	11:45 AM	540

SRC # over 320: 19 out of 24

COL020	1/15/2005	10:30 AM	510
COL020	2/8/2005	10:45 AM	760
COL020	3/8/2005	5:20 PM	500
COL020	4/12/2005	2:25 PM	660
COL020	5/6/2005	1:06 PM	340
COL020	6/10/2005	1:25 PM	340
COL020	7/12/2005	2:50 PM	880
COL020	8/9/2005	3:10 PM	990
COL020	9/13/2005	8:15 AM	1090
COL020	10/12/2005	4:00 PM	1080

of samples over 320 in Colgan Creek: 10 out of 10

Station ID	Date	Time	pH
PCC020	1/25/2003	11:50 AM	7.3
PCC020	2/28/2003	3:30 PM	7.3
PCC020	3/28/2003	12:20 PM	7.3
PCC020	5/23/2003	11:35 AM	7.4
PCC020	8/1/2003	10:40 AM	7
PCC020	9/5/2003	11:00 AM	7.1
PCC020	10/10/2003	2:00 PM	6.3
PCC020	11/14/2003	1:00 PM	6.4
PCC020	12/12/2003	11:45 AM	6.6
PCC030	1/25/2003	11:30 AM	7.4
PCC030	2/28/2003	3:00 PM	7.3
PCC030	3/28/2003	11:45 AM	7.3
PCC030	5/23/2003	11:55 AM	7.4
PCC030	8/1/2003	11:00 AM	6.9
PCC030	9/5/2003	10:30 AM	7.3
PCC030	10/10/2003	1:30 PM	6
PCC030	11/14/2003	1:45 PM	6.2
PCC030	12/12/2003	1:00 PM	6.6
PCC040	1/25/2003	11:00 AM	7.5
PCC040	2/28/2003	2:00 PM	7.5
PCC040	3/28/2003	10:45 AM	7.2
PCC040	5/23/2003	12:10 PM	7.5
PCC040	8/1/2003	11:45 AM	6.9
PCC040	9/5/2003	10:00 AM	7.8
PCC040	10/10/2003	12:00 PM	6.4
PCC040	11/14/2003	2:05 PM	6.4
PCC040	12/12/2003	1:00 PM	6.6
PCC020	1/31/2004	1:20 PM	7.5
PCC020	2/27/2004	11:40 AM	7.4
PCC020	3/28/2004	12:00 PM	7.5
PCC020	5/14/2004	12:00 PM	7.7
PCC020	6/4/2004	11:00 AM	7.5
PCC020	7/2/2004	1:40 PM	7.7
PCC020	8/6/2004	10:40 AM	7.4
PCC020	9/26/2004	3:45 PM	7.4
PCC020	10/24/2004	4:10 PM	7.5
PCC020	11/28/2004	5:05 PM	7.4
PCC020	12/19/2004	12:30 PM	7.4
PCC030	1/31/2004	1:45 PM	7.4
PCC030	2/27/2004	11:00 AM	7.6
PCC030	3/28/2004	11:30 AM	7.5
PCC030	5/14/2004	11:45 AM	7.7
PCC030	6/4/2004	10:25 AM	7.6
PCC030	7/2/2004	1:14 PM	7.6
PCC030	8/6/2004	10:10 AM	7.1
PCC030	11/28/2004	4:50 PM	7.6
PCC030	12/19/2004	12:10 PM	7.5
PCC040	1/31/2004	2:20 PM	7.4
PCC040	2/27/2004	9:20 AM	7.5
PCC040	3/28/2004	10:30 AM	7.5
PCC040	5/14/2004	11:00 AM	7.7
PCC040	6/4/2004	10:00 AM	7.6
PCC040	7/2/2004	12:30PM	7.6
PCC040	8/6/2004	9:45 AM	7.5
PCC040	9/26/2004	4:00 PM	7.1
PCC040	10/24/2004	3:50 PM	7.5
PCC040	11/28/2004	4:30 PM	7.7
PCC040	12/19/2004	11:30 AM	7.8
PCC020	1/30/2005	1:20 PM	7.5
PCC020	2/27/2005	12:00 PM	7.4
PCC020	3/25/2005	11:20 AM	7.4
PCC020	5/1/2005	4:30 PM	7.4

PCC020	5/30/2005	12:20 PM	7.4
PCC020	6/26/2005	3:50 PM	7.4
PCC020	7/31/2005	12:25 PM	7.4
PCC020	9/5/2005	11:20 AM	7.1
PCC020	9/25/2005	10:55 AM	7.9
PCC030	1/30/2005	1:00 PM	7.6
PCC030	2/27/2005	12:10 PM	7.3
PCC030	3/25/2005	11:00 AM	7.4
PCC030	5/1/2005	4:15 PM	7.4
PCC030	5/30/2005	12:00 PM	7.4
PCC030	6/26/2005	3:30 PM	7.4
PCC030	7/31/2005	12:00 PM	7.4
PCC030	9/5/2005	10:40 AM	7.4
PCC030	9/25/2005	9:40 AM	7.9
PCC040	1/30/2005	12:18 PM	7.7
PCC040	2/27/2005	11:20 AM	7.7
PCC040	3/25/2005	10:20 AM	7.7
PCC040	5/1/2005	3:45 PM	7.8
PCC040	5/30/2005	11:15 AM	7.7
PCC040	6/26/2005	3:00 PM	7.7
PCC040	7/31/2005	11:30 AM	7.8
PCC040	9/5/2005	10:10 AM	7.6
PCC040	9/25/2005	9:20 AM	7.8

Station ID	Date	Time	MPN Total coliform in sample	MPN E.coli in sample
SRC040	8/3/2004	5:45 PM	876	281
SRC040	8/1/2005	9:15AM	5012	383
SRC040	8/10/2005	9:40AM	3,968	278
SRC040	8/15/2005	8:40AM	2,187	384
SRC040	8/22/2005	11:45AM	3,784	556
SRC040	8/29/2005	2:30PM	4,160	459
SRC040	9/7/2005	9:15AM	5,493	609

samples exceeding E. coli of 235 per 100 ml: 7 out of 7

Station ID	Date	Time	MPN Total coliform in sample	MPN E.coli in sample
SRC040	8/3/2004	5:45 PM	876	281
SRC040	8/1/2005	9:15AM	5012	383
SRC040	8/10/2005	9:40AM	3,968	278
SRC040	8/15/2005	8:40AM	2,187	384
SRC040	8/22/2005	11:45AM	3,784	556
SRC040	8/29/2005	2:30PM	4,160	459
SRC040	9/7/2005	9:15AM	5,493	609

Station ID	Date	Time	Turbidity (NTU)
LAG030	1/23/2003	11:30 AM	35.8
LAG030	2/26/2003	10:20 AM	11.2
LAG030	3/31/2003	3:00 PM	15
LAG030	4/27/2003	11:00 AM	23.2
LAG030	6/8/2003	2:30 PM	26.5
LAG030	7/6/2003	10:30 AM	33.4
LAG030	8/11/2003	10:48 AM	
LAG030	10/5/2003	11:30 AM	32.2
LAG030	11/16/2003	4:00 PM	16.7
LAG030	12/14/2003	12:00 PM	14.9
LAG040	6/20/2003	3:20 PM	25
LAG040	8/13/2003	3:00 PM	33
LAG050	6/21/2003	9:30 AM	5.5

of samples over 25 NTU in Laguna de Santa Rosa: 6 exceedances out of 14

Name	Affiliation(s)	Title	Role	Functions	Creek					Phone	Email
Mike Sandler	CCWI	Program Coordinator	Technical Leader, Trainer	Project Director, Volunteer coordinator		6741 Sebastopol Ave Ste 140	Sebastopol	CA	95472	707-824-4370	mike@ccwi.org
Beth Robinson	CCWI	Program Associate	QA Officer, Trainer	Field Manager, Lab Manager, Volunteer coordinator		6741 Sebastopol Ave Ste 140	Sebastopol	CA	95472	707-824-4370	beth@ccwi.org
Heather Reese	CCWI Citizen Monitoring Program-AmeriCorps Watershed Stewards			Volunteer Citizen Monitor	Laguna de Santa Rosa						
Shane Phillipps	CCWI Citizen Monitoring Program-AmeriCorps Watershed Stewards			Volunteer Citizen Monitor	Laguna de Santa Rosa						
Celeste Dodge	CCWI Citizen Monitoring Program-AmeriCorps Watershed Stewards			Volunteer Citizen Monitor	Laguna de Santa Rosa						
Lucia Chan	CCWI Citizen Monitoring Program-AmeriCorps Watershed Stewards			Volunteer Citizen Monitor	Laguna de Santa Rosa						
Steve Greek	CCWI Citizen Monitoring Program			Volunteer Citizen Monitor	Laguna de Santa Rosa						
Paul Larkin	CCWI Citizen Monitoring Program			Volunteer Citizen Monitor	Santa Rosa Creek						
Tom Austin	CCWI Citizen Monitoring Program- Dutch Bill Creek Watershed Group			Volunteer Citizen Monitor	Dutch Bill Creek						
Doug Vincent	CCWI Citizen Monitoring Program-Pocket Canyon Protection Group			Volunteer	Pocket Canyon Creek						

Table 5-1: List of parameters and data sources

A. All Samples/Stations - Routine

Parameter	Where measured	Data Collected by	Measurement Method	Measurement Range
Conductivity	Field	CCWI Field operators	Electrode	0 to 2000 μ S
DO	Field	CCWI Field operators	Polarographic Electrode	0 to 20 mg/L

Temperature	Field	CCWI Field operators	Bulb Thermometer	-10 to 110°C	
pH	Field	CCWI Field operators	Electrode	-1 to 15 pH units	
Turbidity	Field	CCWI Field operators	Nephelometer	0 to 1000 NTUs	
Flow Conditions	Field	CCWI Field operators			
Stage	Field	CCWI Field operators			
Velocity	Field	CCWI Field operators			
Rainfall	Field	others (Weather forecasting/ tracking agencies)			
Nitrate	CCWI in-house Lab	CCWI Lab operators	Colorimetric Cadmium Reduction	0.02 to 1, 0.02* to 10 mg/L	
Phosphate	CCWI in-house Lab	CCWI Lab operators	Colorimetric Salicylate	0 to 1, 0 to 5, 0 to 50 mg/L	

Table 6-3: Laboratory Analytical Suite

Dataset ID	Parameter	Unit	Lab	Method # /Kit ID	Method Name/P rinciple
DTS-RR01	Ammonia	mg/l	CCWI	Reagent Kit	Salicylate
DTS-RR01	Nitrate	mg/l	CCWI	Reagent Kit	cadmium reduction
DTS-RR01	Phosphate	mg/l	CCWI	Reagent Kit	ascorbic acid
DTS-RR01	Total coliform	MPN/100 ml	CCWI	Colilert	Enzyme- substrate
DTS-RR01	E.coli	MPN/100 ml	CCWI	Colilert	Enzyme- substrate